

## **LITHOGRAPHIC DEVICE AND METHOD FOR WAFER ALIGNMENT WITH REDUCED TILT SENSITIVITY**

### **ABSTRACT**

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A wafer or substrate alignment system for a lithographic apparatus, capable of exhibiting reduced tilt sensitivity, is presented herein. In particular, the substrate alignment system detects a position of a substrate relative to a position of a patterning device and <sup>includes</sup> ~~comprises~~ a source configured to generate an incoming optical beam, at least one grating, provided on the substrate, having a diffracting length, in which the at least one grating is configured to generate at least one diffraction order of constituent diffracted beams based on an interaction with the incoming optical beam over the diffracting length. The system further <sup>includes</sup> ~~comprises~~ an optical device, configured to image the at least one diffracted order on a sensor device, and includes aperture at a predetermined location to allow the constituent diffracted beams to pass through. The optical device is arranged to broaden the constituent diffracted beams such that a beam diameter of the constituent diffracted beams is larger than a diameter of the aperture, in order to reduce the sensitivity to tilt.